

ing is to be carried on as an industry, may often prove useful in every-day life. A fire is kindled somewhere in a field (the fuel should be green branches, heather, or juniper bushes), and the smoke is led through a trough or channel of boards to a barrel placed upside down from which the top has been removed. At the lower end an opening is cut to admit the boards, and the opening at the top is covered with mats or a sack, which allows some of the smoke to pass through. Sticks of wood are placed crosswise inside the barrel, and the fish are hung on these. For cold-smoking the channel is made 7 yards long, and for warm-smoking much shorter. In the latter process, in fact, the fire may even be made under the barrel.

139.—THE SAINT JOHN'S RIVER AS A SHAD STREAM.

By H. H. CARY, M. D.

I have just returned from Florida, and have been continuing my researches on the Saint John's River in investigating the habits of the shad in that stream. From the best information I can gather, it was not known that shad passed up the Saint John's at all until after the war, and I may say very few were captured until within the last few years. As there are no shoals in this river it has very much puzzled fish-culturists to ascertain where they cast their spawn. The Upper Saint John's has quite a number of broad, shallow lakes, beginning with Monroe and ending with Washington. These lakes have large areas of bottom consisting of clean sands. I am satisfied the shad casts her spawn upon these sands. It is somewhat difficult to gather up information in regard to the Upper Saint John's, as sometimes not an inhabitant can be found for 50 miles. The shad commence running in the Saint John's in December. Better appliances are now being used at Jacksonville for their capture than heretofore, and hence the catch is comparatively large. I was in Jacksonville on the 14th instant, and found a large supply of shad in the market, captured opposite the city. Upon investigation I found about an equal number of males and females, many of the females not quite, but very nearly, ripe. The river at this point is wide, so that the small nets used can capture but a limited number of the whole school that passes. And still at this point careful inquiry among the fishermen shows that from 2,000 to 2,500 are captured a day. Grown shad were selling in the Jacksonville market at 25 cents apiece. Now, if proper appliances were had in the Saint John's for capturing and artificially hatching, this river might easily produce an almost unlimited number of shad, as there is never any interference from ice; and as the watershed of the Saint John's is a sandy surface almost destitute of argillaceous matter, the water never becomes turbid, and there are comparatively no freshets.

DEPARTMENT OF AGRICULTURE,

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